

805 KAR 9:010. Protection of fresh water zones.

RELATES TO: KRS 349.045, 349.110, 40 C.F.R. Parts 124, 136, 144, 146-148

STATUTORY AUTHORITY: KRS 349.115

NECESSITY, FUNCTION, AND CONFORMITY: KRS 349.115 authorizes the Department for Natural Resources to adopt all rules, administrative regulations, and amendments to implement the provisions of KRS Chapter 349 governing coal bed methane wells. The waste of coal bed methane is prohibited by KRS 349.035. KRS 349.110 provides that the Department for Natural Resources shall exercise supervision over the drilling, casing, plugging, and filling of all coal bed methane wells. This administrative regulation establishes requirements to protect fresh water zones from contamination associated with the production of coal bed methane.

Section 1. Definitions. The definitions contained in KRS 349.010 and the following additional definitions shall apply to this administrative regulation:

- (1) "Abnormal pressure" means a reservoir pressure that exceeds the hydrostatic pressure of fresh water extending from the reservoir to the surface.
- (2) "Annulus" means the space between two (2) strings of casing or between a string of casing and the bore hole wall.
- (3) "Casing or casing string" means steel tubes or pipes installed in a well.
- (4) "Cement" means hydraulic cement properly mixed with water or with standard additives, which is used to fill the annulus of casing strings or to plug the well.
- (5) "Division" means the Division of Oil and Gas Conservation.
- (6) "Fresh water zone" means the groundwater contains less than 10,000 ppm total dissolved solids.
- (7) "Groundwater supply source" means a well, spring or other groundwater source that is currently being utilized as a water supply for domestic, agricultural, industrial or other beneficial purposes.
- (8) "Intermediate casing" means one (1) or more strings of pipes installed in a well, in addition to the surface casing, in which each string is smaller in diameter than the previous one (1).
- (9) "Long casing string" means the last casing installed in a well to be used for production or injection purposes.
- (10) "Surface casing" means the first and largest diameter casing installed in a well; its primary uses are to prevent collapse of the bore hole and protect fresh water zones.
- (11) "Zone" means a layer of strata capable of producing or receiving fluids.

Section 2. Groundwater Information. (1) Baseline groundwater information shall be collected for the area surrounding a coal bed methane well location prior to the drilling of the proposed well. This information shall include an inventory of groundwater supply sources which are located within 1,250 feet of the well. The inventory shall include:

- (a) The location of the groundwater supply source;
 - (b) The type of usage of the groundwater supply source;
 - (c) The diameter and depth of wells, if possible to determine;
 - (d) The approximate rate of usage, capacity, or discharge from the groundwater supply source, if possible to determine; and
 - (e) Groundwater quality and quantity information required in subsection (2) of this section for each groundwater supply source located within 1,250 feet of the coal bed methane well.
- (2) Groundwater quality and quantity baseline information for each groundwater supply source within 1,250 feet of the coal bed methane well shall be maintained for the life of the well. This information shall include the following:

- (a) The elevation of groundwater in wells and underground mines, or the flow or discharge from springs;
- (b) Total dissolved solids;
- (c) Specific conductance, corrected to twenty-five (25) degrees C;
- (d) pH;
- (e) Chlorides;
- (f) Bromides;
- (g) Acidity;
- (h) Alkalinity; and
- (i) Sulfate.

(3) The water quality sampling and analysis required by this section shall be conducted in accordance with 40 C.F.R. Part 136. Sampling and analysis results shall be provided to the department at the time of permit application.

(4) The applicant shall identify all water supply wells being used for residential or domestic purposes within one-half (1/2) mile of the proposed coal bed methane well and shall comply with the ground water protection requirements of KRS 349.040(3)(d).

Section 3. Protection of Fresh Water Zones for Drilling or Plugging Operations. (1) During drilling operations, one (1) of the following methods shall be used to protect fresh water zones:

(a) Method A. Casing shall be set on a casing shoulder and shall have a shoe installed on the bottom of the bottom joint. Upon the completion of the drilling program, all the recoverable casing shall be removed or cemented to the surface.

(b) Method B. Casing shall be set on a shoulder and cemented sufficiently to cover 100 feet, including the shoe. Upon completion of the drilling, all of the recoverable casing shall be removed or cemented to the surface.

(c) Method C. The operator shall utilize a top to bottom drilling mud system, with a filtrate water loss of less than ten (10) cubic centimeters.

(2) If a well is to be plugged, it shall be plugged in the manner prescribed by 805 KAR 9:040.

Section 4. Protection of Fresh Water Zones. Coal bed methane wells subject to the jurisdiction of the Department for Natural Resources drilled subsequent to the effective date of this administrative regulation shall be equipped as follows in order to protect non-producing fresh water zones prior to production or injection.

(1) A protective string of casing, either surface, intermediate, or long string, shall extend thirty (30) feet below the deepest known fresh water zone. The protective string shall have cement circulated in the annular space outside the casing of a sufficient volume of cement, calculated using the standard cement volume formula and accepted constants of well bore hole size, casing size, and casing weight, to assure the return of the cement to the surface. If cement does not return to the surface, the operator shall attempt to fill the annular space by introducing cement from the surface, utilizing a cement basket in order to ensure annular seal at the surface. If the intermediate casing or long casing string is cemented to the surface or cemented thirty (30) feet into the next larger string of cemented casing in conformity with this subsection, the string or combination of strings shall be considered as the fresh water protection.

(2) In areas where abnormal pressures are expected or encountered, the surface or intermediate casing string shall be anchored in sufficient cement, at a sufficient depth to contain the pressures, and blowout prevention valves and related equipment shall be installed.

(3) If a well is drilled through a void, the hole shall be drilled at least thirty (30) feet below the void, the annular space shall be cemented from the base of the casing up to the void and to

the surface from the top of the void, or it shall be cemented at least fifty (50) feet into the next higher string or strings of casing that are cemented to the surface and be verified by a cement top log. If an operator is unable to perform the casing and cementing requirement described above, the department may approve alternative casing procedures proposed by the operator, if the director determines that the alternative casing procedures are operationally equivalent to the requirements imposed by this subsection. If an operator encounters more than one (1) void, the department may also impose special requirements on the operator to prevent communication between two (2) or more voids.

Section 5. Wells Used for Injection of Fluids from Coal Bed Methane Production. Injection well operation shall be in accordance with administrative regulations and permit requirements of the U. S. Environmental Protection Agency (EPA) as set forth in 40 C.F.R. Parts 124, 144, and 146 through 148.

Section 6. Recordkeeping. (1) Within ninety (90) days of completion of the drilling of the well, the operator shall file a completion report on Form CBM-3, entitled "Affidavit of Well Log and Completion Report," which reports the casing and cementing as constructed.

(2) Injection well records shall be filed with EPA in accordance with EPA regulations and permit requirements as set forth in 40 C.F.R. Parts 124, 144, and 146 through 148.

Section 7. Material Incorporated by Reference. (1) "Affidavit of Well Log and Completion Report," Form CBM-3, January 2005, Division of Oil and Gas Conservation, is incorporated by reference.

(2) This form may be inspected, copied, or obtained, subject to applicable copyright law, at the Kentucky Department for Natural Resources, Division of Oil and Gas Conservation, 300 Sower Boulevard, Frankfort, Kentucky 40601, Monday through Friday, 8 a.m. to 4:30 p.m. (31 Ky.R. 1466; eff. 6-8-2005; TAm eff. 7-6-2016.)